



ANSC*6070 Metabolic Regulation of Reproduction

Fall 2021

Section(s): C01

Department of Animal Biosciences

Credit Weight: 0.50

Version 1.00 - September 07, 2021

1 Course Details

1.1 Calendar Description

Reproductive function in mammals demands substantial amounts and adequate balance of nutrients and energy. Consequently, reproductive physiology is tightly regulated by systemic and tissue-specific metabolism. This course uses a multidisciplinary approach to explore the metabolic regulation of reproduction and its implications to reproductive health, fertility, and developmental biology. Students should have a strong background in reproductive physiology and a good understanding of molecular and cellular biology and scientific methods prior to enrolling.

Pre-Requisites: ANSC*3040 - Minimum grade 050.

1.2 Course Description

Calendar Description

Reproductive function in mammals demands substantial amounts and adequate balance of nutrients and energy. Consequently, reproductive physiology is tightly regulated by systemic and tissue-specific metabolism. This course uses a multidisciplinary approach to explore the metabolic regulation of reproduction and its implications to reproductive health, fertility, and developmental biology.

Course Outline Description

The overall theme of animal physiology and, more specifically, the disciplines of reproductive physiology and metabolic physiology are of great relevance in the field of Animal Biosciences. This course aims to integrate these two disciplines and discuss the metabolic regulation of reproductive physiology. Weekly meetings of approximately 3 h will be used to discuss

preassigned literature reviews and original articles focused on a specific topic. In addition, students will present short proposals focused on a novel hypothesis related to theme of the week and experimental methods to test the proposed hypothesis.

Meetings will be composed of three parts, and each part will be led by a different student.

- Part 1: Discussion of pre-assigned literature reviews. One to three literature reviews of the weekly topic will be selected by the course coordinator. One student will be selected to present a 12-15 min summary of the main concepts presented in the literature review(s). This presentation will be followed by a group discussion, which will be moderated by the course coordinator.
- Part 2: Discussion of original paper. A second student will be selected to search scientific databases and identify an original paper (2018 or newer) related to the weekly topic. After approval from course coordinator (at least 4 days before the meeting), the original paper will be distributed to all students in the course. The student that selected the paper will present a 12-15 min summary of an original research article. This presentation will be followed by a group discussion of the original article, which will be moderated by the course coordinator.
- Part 3: Discussion of new hypothesis and research methods. A third student will be responsible to develop a new hypothesis on the weekly topic being discussed and perform a short presentation (up to 15 min) to explain the basis and relevance of the new hypothesis and to proposed how it could be tested. This presentation will be followed by a group discussion focused on the student's proposal, alternative hypotheses, and alternative research methods.

1.3 Timetable

Group meetings: 3 hours per week – TBD.

Timetable is subject to change. Please see WebAdvisor for the latest information.

COVID-19 Disclaimer: please be aware that the information on course delivery, accessibility

and examinations presented in this outline were developed based on current University guidelines. However, due to the continuously evolving situation and resulting changes in public health recommendations, the format and delivery of this course may be revised with limited notice.

1.4 Final Exam

There is no final exam in this course.

2 Instructional Support

Instructor: Eduardo de Souza Ribeiro
Office: ANNU137
Phone extension: 56516
E-mail: eribeiro@uoguelph.ca

Instructor's Role and Responsibility to Students:

The instructor will coordinate all activities, facilitate discussions, and provide feedback.

3 Learning Resources

Teams will be used for weekly meetings, and all course material will be provided in CourseLink.

3.1 Additional Resources

System and Software (Software)

System and Software Requirements

This course will use a variety of technologies including;

- CourseLink (main classroom)
- Teams (via Office 365)

To help ensure you have the best learning experience possible, please review the list of system and software requirements.

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary system requirements. Use the browser check tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

<http://spaces.uoguelph.ca/ed/system-requirements/>
<https://courselink.uoguelph.ca/d2l/systemCheck>

Course Technologies (Other)

Course Technologies

CourseLink

This course is being offered using CourseLink (powered by D2L's Brightspace), the University of Guelph's online learning management system (LMS). By using this service, you agree to comply with the University of Guelph's Access and Privacy Guidelines. Please visit the D2L website to review the Brightspace privacy statement and Brightspace Learning Environment web accessibility standards.

<http://www.uoguelph.ca/web/privacy/> <https://www.d2l.com/legal/privacy/>
<https://www.d2l.com/accessibility/standards/>

Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

Email: courselink@uoguelph.ca

Tel: 519-824-4120 ext. 56939 Toll-Free (CAN/USA): 1-866-275-1478

Support Hours (Eastern Time):

Monday thru Friday: 8:30 am–8:30 pm

Saturday: 10:00 am–4:00 pm

Sunday: 12:00 pm–6:00 pm

Teams (via Office 365)

Office 365 Teams is a collaboration service that provides shared conversation spaces to help teams coordinate and communicate information. This course will use Teams for the weekly meetings. It is recommended that you use the desktop version of Teams. As a student you are responsible for learning how to use Teams and its features.

For Teams Support visit the CCS website for more information.

<https://www.uoguelph.ca/ccs/services/office365/teams>

3.2 Library Access

vii. Library Access

As a student, you have access to the University of Guelph's library collection, including both physical and electronic materials. For information on checking out or couriering physical library items, accessing electronic journals and returning items to the library, visit the library's website.

If you are studying off campus and would like to access the library's electronic resources, use the Off Campus Login and login using your Single Sign On credentials or using your last name and library barcode.

<https://www.lib.uoguelph.ca/>

<https://www.lib.uoguelph.ca/campus-login>

Ares

To access reserve materials through the University of Guelph McLaughlin Library, select **Ares** on the navbar in CourseLink. Note that you will need your Central Login ID and password in order to access items on reserve.

For further instructions on accessing reserve resources, visit [How to Get Course Reserve Materials](#).

If at any point during the course you have difficulty accessing reserve materials, please contact the e-Learning Operations and Reserve Services staff at:

Tel: 519-824-4120 ext. 53621

Email: libres2@uoguelph.ca

<https://www.lib.uoguelph.ca/find/course-reserves-ares/how-get-course-reserve-material>

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Recognize the energy and nutrients costs of reproduction in mammals.
2. Understand reproductive physiology in the context of energy and nutrients partition.
3. Explain the metabolic regulation of mammalian reproductive physiology and its importance to reproductive health and fertility of females and males.
4. Understand the contribution of maternal and paternal metabolism to health and metabolism of pregnancy and offspring.
5. Recognize the impact of energy and nutrient status, specific nutrient deficiency, and stress on reproductive physiology and reproductive behaviour.
6. Identify opportunities for new research exploration and translation in the field of metabolic regulation of reproduction.
7. Develop skills for integration of disciplines, critical thinking, development of new hypothesis, design of hypothesis-driven experiments, and communication.

5 Teaching and Learning Activities

5.1 Tentative Schedule

Event	Date	Theme
Introduction	9-Sep	---
Preparation time	16-Sep	---
Discussion 1	23-Sep	Hypothalamus
Discussion 2	30-Sep	Feeding behaviour

Discussion 3	7-Oct	Spermatogenesis
Discussion 4	14-Oct	Epigenetics of sperm
Discussion 5	21-Oct	Ovarian follicles
Break	28-Oct	---
Discussion 6	4-Nov	Uterine histotroph
Discussion 7	11-Nov	Placenta and fetus
Discussion 8	18-Nov	Fetal programming
Discussion 9	25-Nov	Postpartum uterus
Discussion 10	2-Dec	Postpartum disease

6 Assessments

6.1 Marking Schemes & Distributions

Assignment	Due Date	Weighting	Learning Outcome(s) Assessed
Assessment 1: Short presentation(s) (15 min) of main scientific concepts from assigned literature reviews.	To be assigned on the first day of class	25%	1-7
Assessment 2: Short presentation(s) (15 min) of chosen original article.	To be assigned on the first day of class	25%	1-7
Assessment 3: Short presentation(s) (15 min) of research proposal focused on a new hypothesis and description of experimental design to test the new hypothesis.	To be assigned on the first day of class	25%	1-7

Assessment 4: Participation in classroom discussions of literature reviews, original articles, and novel research proposals.	To be evaluated each meeting	25%	1-7
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During each meeting, the course instructor will evaluate performance of each student based on presentations and group discussions. Constructive feedback from course coordinator will be provided each week. Constructive feedback among students will be encouraged but will not affect individual grades.

Participation on discussions (25 points): each student will be evaluated based on level of engagement (1 point) and depth of knowledge (1.5 point) on each meeting. At the end of the semester, each student should have 11 evaluations. The lowest evaluation will be dropped, and the final grade for *Participation on discussions* will be sum of the highest 10 evaluations ($10 \times 2.5 = 25$).

Presentation of literature reviews (25 points): each student will present a short summary of assigned literature reviews at least once during the semester. Each presentation will be evaluated by the course coordinator based on 1) depth of knowledge (15 points), 2) organization of ideas (5 points), and 3) delivery of presentation (5 points). The total number of presentations will depend on the number of students enrolled in the course, and final grade for *Presentation of literature reviews* will be the average of all evaluations of this category.

Presentation of original article (25 points): each student will present a short summary of a chosen original research article at least once during the semester. Each presentation will be

evaluated by the course coordinator based on 1) depth of knowledge (15 points), 2) organization of ideas (5 points), and 3) delivery of presentation (5 points). The total number of presentations will depend on the number of students enrolled in the course, and final grade for *Presentation of original article* will be the average of all evaluations of this category.

Presentation of research proposal (25 points): each student will present a short presentation of a research proposal at least once during the semester. Each presentation will be evaluated by the course coordinator based on 1) novelty and relevance of new hypothesis (10 points), 2) appropriateness of experiment design (10 points), and 3) delivery of proposal (5 points). The total number of presentations will depend on the number of students enrolled in the course, and final grade for *Presentation of research proposal* will be the average of all evaluations of this category.

7 University Statements

7.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

7.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

7.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

7.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

7.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website

<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website

<https://www.ridgetownc.com/services/accessibilityservices.cfm>

7.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

7.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

7.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

7.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

7.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

7.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
